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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,311	09/09/2004	Tony Yang	OMCP0004USA	5310
27765	7590	11/29/2005		
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			EXAMINER HAM, SEUNGSOOK	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/711,311		YANG, TONY	
	Examiner		Art Unit	
	Seungsook Ham		2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/9/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to because the reference numbers in figure 2 do not match with the description in the specification (see paragraph [15], e.g., an incoming positive in-phase terminal I coupled to a first end of the first resistor R1 and a first end of the first capacitor C1 using a first connection **Con1**...").

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter of claims 5, 6, 8, and 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Egami et al. (US '831).

Egami et al. (fig. 9) discloses a polyphase network 12 comprising: first, second, third and fourth impedance of the first type (the first four sets of 90° HYB in the multi-port hybrid coupler 12); first, second, third and fourth impedance of a second type (the middle four sets of 90° HYB in the multi-port hybrid coupler 12); a first connection (the first connection coupled between the first 90° HYB of the first set to the first 90° HYB of the middle set) coupled between a first end of the first impedance of the first type and a first end of the first impedance of the second type; a second connection (the last/bottom connection coupled between the fourth 90° HYB of the first set to the fourth 90° HYB of the middle set) coupled between a second end of the fourth impedance of the first type and a second end of the fourth impedance of the second type; a seventh connection (the connection coupled between the second 90° HYB of the first set to the third 90° HYB of the middle set) coupled between a second end of the second impedance of the first type and a first end of the third impedance of the second type; and eighth connection

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(the connection coupled between the third 90° HYB of the first set to the second 90° HYB of the middle set) coupled between a first end of the third impedance of the first type and a second end of the second impedance of the second type; a third connection (the connection coupled between the second 90° HYB of the first set to the first 90° HYB of the middle set) coupled between a first end of the second impedance of the first type and a second end of the first impedance of the second type; a fourth connection (the connection coupled between the first 90° HYB of the first set to the second 90° HYB of the middle set) coupled between a second end of the first impedance of the first type and a first end of the second impedance of the second type; a fifth connection (the connection coupled between the fourth 90° HYB of the first set to the third 90° HYB of the middle set) coupled between a first end of the fourth impedance of the first type and a second end of the third impedance of the second type; and a sixth connection (the connection coupled between the third 90° HYB of the first set to the fourth 90° HYB of the middle set) coupled between a second end of the third impedance of the first type and a first end of the fourth impedance of the second type; wherein the third connection crosses the fourth connection, the fifth connection crosses the sixth connection, and the seventh connection crosses the eighth connection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.¹

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egami et al. (US '831).

Egami et al. is applied as above. Egami et al. is silent as to whether the in-phase terminals 2_1 - 2_8 contain positive and negative signals. However, it would have been obvious to one of ordinary skill in the art to provide positive and negative in-phase/quadrature-phase terminals in the device of Egami et al. since 90° hybrid coupler provides 90° phase shift differences between two output signals ($+45^\circ$ and -45°).

The subject matter of claims 2 and 3 are inherent from the device of Egami et al. since the network 12 is a symmetrical circuit.

Regarding claims 5, 6, 8 and 9, providing the network in a plurality of layers using vias connections is considered as an obvious design modification since such design technique is well known in the art, and it requires only a routine skill in the art.

Claims 11, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egami et al. (US '831) in view of Molnar et al. (US '543).

Egami et al. does not show the impedances of the first type are resistors and the impedances of the second type are capacitors.

Molnar et al. (fig. 3) discloses a conventional 90° phase shifter using resistors and capacitors. Note that the 90° hybrid coupler in the device of Egami et al. is functionally equivalent to 90° phase shifter of Molnar et al.

Therefore, it would have been obvious to one of ordinary skill in the art to use the four-port 90° phase shifter of Molnar et al. as the impedances of the first and the second types in the device of Egami et al. since both phase shifters are functionally equivalent.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tondryk discloses a multi-port microwave coupler having cross-coupled connections; and

McGee et al. (US '109) discloses a symmetrical polyphase networks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Seungsook Ham
Primary Examiner
Art Unit 2817

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